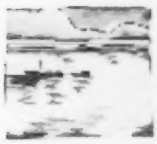

Alberta's Water Strategy

A Summary of Ideas

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A Summary of Ideas that Emerged from Three Ideas Group[1] Meetings

1. A Water Strategy Discussion is Worthwhile and Important

The Ideas Group felt certain that a public discussion about future strategy for water management in this province is worthwhile and important. They felt there would be interest in the discussion, but many Albertans would need some help understanding the trends and changes that make the discussion important at this time.

- **A media "build up" to the discussion will help greatly**
  Many Albertans will not immediately realize the trends and changes that are beginning to affect water supply and use in this province. Public information that helps Albertans understand the challenges and opportunities associated with water in this province will help them participate effectively. If this information appeared several times before the actual request for involvement, participation would be higher and the quality of advice would also be raised.

- **Albertans are already talking about water**
  Ideas Group members felt that water is a current topic, for many reasons (recent drought, Walkerton, municipal concerns, intensive livestock operations). Albertans are not likely to be surprised the government wants a public discussion about the future of water.

- **Ensure that the federal, provincial and municipal governments are working together to achieve shared outcomes.**
  Water does not recognize government divisions. All three levels of government will have to "buy in."

- **Try to involve a cross-section of Albertans, not just those with a problem**
  This discussion will easily attract everyone with an immediate water problem, or an immediate need to lobby the government about current or future water concerns. However, it is essential the consultation reaches a cross-section of Albertans, not just those with a problem or an immediate interest. It was noted that urban Albertans will likely have a lower understanding of the issues and less inclination to become involved, but will make up a substantial political presence when decisions that result from this strategy come into the political forum.

2. General Thoughts About Public Strategy Discussions

Any future discussion will be affected by the following factors:

- We (Alberta citizens) assume that government is a major answer to these questions and rely upon regulatory controls significantly.

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[1] The "Ideas Group" was a discussion group of Albertans who were invited to identify the range of ideas needed to establish a broad basis for a public discussion on water. Representatives were chosen to represent a broad range of interests (see Attachment 3).

- We need to think about watersheds, not just water. Water does not start at the bank of a river, lake or wetland.
- It is difficult to account for human behaviour and adaptation to changes.
- Random approaches interfere with human adaptation. Predictability supports adaptation.
- Results are affected by feedback in the system (i.e. people learn about other options and try to use them; people adapt more efficiently if they learn about changes in the system as people respond to the options available).
- In projecting the future, we rely heavily upon our beliefs. We make assumptions based upon our experience.
- Implementation is important: how and when changes are implemented has a major impact on the result.
- The farther ahead we project, the less consistent our perceptions and assumptions.
- Population growth, in and of itself, does not necessarily create the problem.
- Problems can be solved by managing peoples' expectations as well as through changes in the actual situation.

3. The "Objectives" Should Provide a Framework

There was little agreement about what an "objective" is, but considerable agreement about the need for a framework for the discussion. The Ideas Group felt that key words are at least as important as objectives. Categories that must be described in the "objectives" include the following:

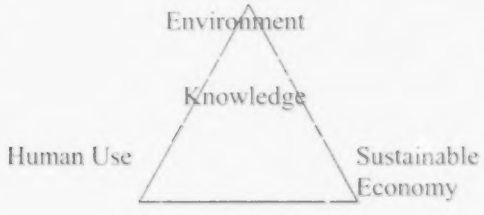
- **Environment**
  "Healthy ecosystems: watersheds, rivers, streams, lakes, wetlands and groundwater"

- **Human Use**
  "Safe, secure supplies of drinking water"

- **Knowledge**
  "Knowledge needed to make wise choices about water"

- **Sustainable Economy**
  "Reliable, quality water supplies needed for a sustainable economy"

It would be good to show the objectives in an "inter-related" way rather than a list, which suggests hierarchy:



4. People Will Need Information

People must be given background information so they understand the context of the discussion. The discussion of a water strategy should not hang on "climate change" as if all strategies depend upon knowing whether or not current climate patterns are the result of human industrial activity. Instead, the discussion should note that well documented changes in climate and water supply have happened in the past and will happen again in the future.

They felt Albertans will be interested in the discussion, primarily because water is a key part of "environment" and "health." However, they cautioned it would be easy to become embroiled in disputes over water rights: "Whisky is for drinkin', water is for fightin'."

The group felt that information about water flows and allocation in Alberta are particularly helpful. They also felt Albertans should have the opportunity to learn about international perspectives on water use (e.g. Western Governors' report; comments by Dr. Sandra Postell). Albertans should also be reminded that when water is "free"; it is not always used for its "highest purpose" (Dr. Andre Plourde).

5. Participants Will Need Summary References About the Future and the Past

Generally, Albertans will have difficulty understanding past and future changes that affect the way we will think about water in the future. Most Albertans will tend to think the conditions they have experienced in the past ten years are "normal" and overlook longer term cycles and changes that affect water supply, demand and quality.

The Ideas Group identified several "key factors" that will help people think about the future. They also identified the kinds of assumptions likely to dominate future thinking. More importantly, they felt there must be emphasis upon the things that we do not know. The Ideas Group's effort to help people think about the future is noted in Attachment 1.

6. International, Western Canadian, Provincial and "Zone" Perspectives Are All Important

The Ideas Group recommended the discussion of water should begin with the knowledge that internationally, Canada is seen as a "water rich" nation. There should also be a "Western Canadian" perspective that makes it clear Alberta receives river flow from its neighbours, and is responsible to pass water on to other neighbours. There should, of course, be a provincial perspective. There should also be a more local perspective that describes regional relationships within the province.

The description of regional relationships is illustrated on the attached map (Figure 1). For simplicity, the province should be divided into four "zones", described as follows:

- **Northern Zone**
  An area where river discharge is much higher than the rest of the province and population is relatively low. Water is a fabric of life in this zone, many lifestyles have developed around rivers and water bodies. Forestry, and oil extraction are major users of water.

- **Central Zone**
  An area where the majority of the population lives. Domestic use and agriculture are the major users of water.

- **Eastern Slopes Zone**
  The headwaters of the rivers that provide water for most of the population of Alberta.

- **Southern Zone**
  An area where river discharge is relatively low. Agriculture (irrigation) is the major use. Water demand is high, relative to supply.

7. Are There Good Reasons to Change?

The Ideas Group recognized that most people will see "the way things are" as the most comfortable way to proceed. People naturally resist change, unless they can see reasons to change. The water discussion could lose momentum if people do not see reasons to change early in the discussion.

Who are the voices of change? It would be useful to hear these voices early in the discussion, so people who were not contemplating any changes could understand the drivers for this discussion.

8. Challenges and Opportunities

It was pointed out early in the Ideas Group meetings that the Province should bring forward both challenges and opportunities in the discussion of water. Generally, an opportunity should describe how making investments in change can benefit the people of Alberta. The strongest examples from the Ideas Group described how proactive Albertan investments in water management technologies could create provincial savings in the long run and create an opportunity for international sales of technology.

Attachment 2 identifies the challenge areas the Ideas Group identified as a basis for the discussion. It also identifies opportunities and provides an initial listing of the range of changes that could be contemplated to achieve these opportunities.

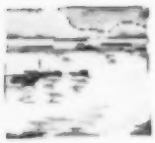
9. Government Has A Role in All Options (But That Role Can Change Significantly)

It was noted earlier that people likely over-emphasize the importance of government regulation in reducing potential challenges related to living systems like Alberta's system of streams, lakes,

wetlands and aquifers. This knowledge raised the question of whether we need government involvement at all to implement a water strategy for the province.

The Ideas Group was strongly convinced that government must play an important role. The core of this role is "setting the rules" for water use. Government may also be critical in coordinating water infrastructure investments. However, other roles of government could change significantly in the future.

The Ideas Group imagined a possible world in which water management is largely undertaken through an open management system (like the building code). In this approach, government would set the rules and would provide inspection and enforcement, but users would work together to ensure standards are met. This approach might be modeled after co-ops or supply chains which have been employed in agriculture to address production challenges.



Alberta's Water Strategy

Attachment 1: Thinking About Future Water Use

Key Factors	What We Think We Know	What We Don't Know
Population	Relatively high growth rate (1.5% per year or greater in urban/suburban areas). "Sprawl" around major urban areas (as boomers retire to countryside).	Growth rate in any location could vary significantly. How much water will each person use? Will more people rely upon groundwater?
Industrial and Agricultural Changes	High interest in oil and gas extraction over next 30 years. Huge development in oil sands. More livestock production in concentrated sites. More coal-based power generation will require major water use. More demand for irrigation.	Changing market conditions could dramatically change the pace of development in all industries. New power sources could reduce water use dramatically. Major changes in irrigation technology could allow more irrigation without more water use.
Climate	Gradual warming, with more variability and more extremes. Increased winds and evaporation. Increased occurrences of woodland and grass fires.	How will precipitation change? Will it come at different times? Will there be less overall or more? Will there be less snow in the mountains? Will the glaciers disappear? How will public perception affect our adaptation to changes?
Values and Preferences	An increasingly urban population will be less informed about rural needs and will expect high environmental values. Greater split between "haves" and "have nots." Continued interest in acquiring "stuff," and continued concern about preserving "quality of life."	How much will telecommunication change our lifestyles and our travel? Will we continue to rely upon market capitalism?
Governance	There will be a continued trend towards multi-sector partnerships, but no other significant changes in the way we are governed.	Will aboriginal governments become significant land managers? Will there be a shift towards local involvement and control? Will more government authority be delegated to private institutions?
International Relations	There will be a greater emphasis upon international agreements and treaties, and a continued growth in international trade. International protocols will place increasing restrictions on what Albertan industries and municipalities are allowed to do.	How will international relations change as many countries, including the United States, experience water shortages? Will international non-government organizations become more powerful?

Key Factors	What We Think We Know	What We Don't Know
Environmental Integrity	There will be significantly more concern about environmental integrity as the pressure on the landscape increases. Continued loss of remnant landscapes on the prairies.	Will Eastern Slopes water sources be protected as industrial, tourism and recreation pressure mounts? How will the integrity of the northern forests be affected by major industrial development? Will recreational use become a major effect upon surface water flow and quality?
Water Productivity	Greater competition for water. Greater motivation to be concerned about water productivity.	Will technology to support water productivity be used more widely?

Alberta's Water Strategy

Attachment 2: Future Challenges and the Opportunities They Present

For every challenge, there are responses that can turn the challenge into an opportunity. The following is merely a starter list of possible changes Albertans can consider as ways to build opportunities for our province, for the future.

Challenge	Opportunity	Considerations
Protect waters from pollution or contamination.	Develop, implement and export de-contamination technologies for groundwater and for surface water. Develop standards and monitoring systems that compare "ecosystem condition" of intake and effluent. Develop an integrated system to manage manure as an energy resource and soil amendment. Encourage industrial ecology.	Soil degradation may affect water quality. Increasing development of intensive development operations has led to an accumulation of manure: manure is often spread on the land for disposal. Spreading on snow, ice or frozen land may take contaminants into water supply. Municipalities are a major point source of pollutants and contaminants. Bottled water is not subject to the water quality standards that public water supplies must meet.
Value water appropriately, for humans and as part of nature.	Developing a way to use market forces to affect use of water. Ensure that when we export water (in meat products, forest products, etc.) that we are exporting high value products.	Albertans generally do not pay for water. A price on water, or a value system for water could be established. Water metering, or "water points" may help users understand the value of water. The supply of water could be de-regulated, to create a market for water. If water is "temporarily borrowed" from the flowing system, and returned with little qualitative change, then the cost of the use should potentially be lower. Should we allow uses that take water from the system for a very long time, or that alter the quality of the water (without restoration of the original quality)?

Challenge	Opportunity	Considerations
Manage water within an ecosystem approach that is sensitive to local conditions.	Develop regional strategies that integrate watershed planning and land use planning. Develop a credible system for evaluating the effect of water volume on the species in a river. Maintain and recover wetlands in the province.	Focus on harmonization with the ecosystem, rather than "master control." Wetlands play a valuable role as water filters and groundwater recharge areas, and provide valued habitat.
Increase water productivity.	Find ways to get the best possible value from the water that we have (including natural productivity within the calculation).	We currently do not have a way to reward "more with less" approaches. Drier countries use methods to reduce loss of water during irrigation (e.g. drip irrigation). Drier countries plant crops that use water more efficiently than crops commonly planted here. There are available technologies to reduce water use. Barriers to implementation include problems related to cost of infrastructure and appropriate scale.
Allocating water for its best use continually.	Develop a water allocation method that can adjust over time to ensure that water is always allocated in the best way possible.	Determining "best use" will not be easy. Currently, water is allocated for uses that would likely be seen to have a "low value." Current legislation allocates water on a "first in time, first in right" basis that is blind to the relative value of the water use.
Stimulate improved water stewardship among all Albertans.	Users could greatly decrease the long term costs of water supply, pollution control and decontamination if they all contributed to minimizing their effects upon the water supply.	Many water uses may not require treatment to "drinking water" quality standards. We could establish uses appropriate for water of lesser quality levels. We could help users separate "water needs" from "water wishes." There may be value in increasing public awareness of water quality and quantity issues. Would it be useful to have mandatory water use reporting to a public data base?

Challenge	Opportunity	Considerations
Ensure all water for human use meets appropriate quality standards.	Develop the best way to assure quality water supplies for Albertans who live in locations that cannot be efficiently connected to a public water supply.	20% of Albertans are not on public water supply, and may not have a system to assure that they have clean, healthy water. Some jurisdictions provide free water quality testing for all small remote locations. While regional treatment and distribution of water may be expensive, it also could provide a solution for many smaller municipalities. If contractors provide water, should they become the guarantor of water quality?
Account for increasing uncertainties in water availability and demand.	Develop a provincial water management system that improves water level prediction and coordinates critical allocation decisions.	Water is much more plentiful in northern Alberta than in southern Alberta. Should inter-basin transfers be considered to provide water to drier areas when supply cannot meet demand? Find ways to build and manage water management infrastructure so ecological values downstream, and in reservoirs, are supported.
Sustain the ecological system.	Define in-stream flow needs for the entire river system, and define basin requirements for lake and wetland systems.	It is difficult to accurately quantify and protect "natural demand." There is not an accurate database that could describe water distribution in the natural system. A database might allow ongoing monitoring by remote sensing.
Protect water sources (e.g. BC, Eastern Slopes, US)	Alberta can reduce exposure to low water supply if all water sources are specifically protected.	There is currently no firm allocation agreement in place with BC or sources of water that flow through Alberta. Snow pack monitoring in the Rocky Mountains is becoming more important to southern Alberta. Snow pack management and rainfall capture (on a large scale) have not yet been tried. Ultimately, there is a fixed limit on supply of water to Alberta. Current information about aquifers (underground pools of water) is limited. Would it be worthwhile to inventory aquifers and learn more about their limitations? Similarly, would it be useful to inventory water recharge and discharge areas?

Challenge	Opportunity	Considerations
Develop sustainable practices.	Become a world leader in developing and implementing sustainable practices.	Currently, irrigation requires major amounts of water that may not be sustainable in the long term.
	Develop power generation technologies that have relatively little effect on natural water systems.	Sustainability of rivers in the Southern Zone will likely require careful consideration of the amount of water that must be maintained in the natural system.
Understanding obligations to people downstream as part of provincial water decisions.		

Alberta's Water Strategy

Attachment 3: Members of the Ideas Group included:

Member Name	Home Location	Interest
Alden Armstrong	Paddle Prairie Metis Colony	Aboriginal
Carolyn Blaikie	Lac La Biche	Environment
Andy Fergus	Calgary	Business Student
Paul Kemp	Calgary	Hydro Power Generation
John Kolk	Picture Butte	Agriculture, Municipal Government
Gary Lehr	Medicine Hat	Water Reclamation Technology
Bill MacKay	Innisfail area	Fisheries
Len Mitzel	Etzikom	Agriculture, Municipal Government
Uldis Silins	Edmonton	Academic (hydrology)
Gordon Thompson	Fort Saskatchewan area	Water Treatment
Les Wetter	Red Deer	Wildlife (wetlands)
Jolie Whetzel	Edmonton	Environmental Consulting
Carol Wilson	Killam	Agriculture